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COLLEGE OF AGRICULTURE  
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SERIES ON CALIFORNIA CROPS AND PRICES

# ALMONDS

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# ALMONDS

H. R. WELLMAN<sup>1</sup> AND E. W. BRAUN<sup>2</sup>

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## SUMMARY

The commercial production of almonds in the United States is practically confined to California. For many years before 1914 the bearing acreage of almonds in this state remained practically stationary at about 15,000 acres. Since 1914 the bearing acreage has increased rapidly and continuously, until at the present time there are approximately 87,000 acres in bearing. Furthermore, it is likely that the trend of bearing acreage will continue upward until 1929, at which time it is estimated that there will be an additional 8,000 acres in bearing. For the few years immediately after 1929, however, no further increase in bearing acreage is expected because the plantings during the past few years have been relatively small.

The production of almonds has also increased substantially, rising from an average of 2,600 tons in 1914 to an average of 13,000 tons in 1927. California marketing organizations now have to find outlets for five times as many almonds as they did before the war. The development of these outlets has been made particularly difficult by the wide fluctuations in production from year to year. In years of large production it is necessary to find many new customers for California almonds, and, to a considerable extent, this means the displacement of foreign almonds by domestic almonds. In years of small production these new customers cannot be supplied with their full requirements. Consequently it is difficult to retain their trade. This problem is becoming increasingly difficult because of the tendency for fluctuations to become greater.

The average yield of almonds for the state as a whole is unprofitably low. Even with the relatively high prices which have prevailed during the last three years, the average gross income has not generally been large enough to pay the costs of production. Under most conditions yields as low as the present average for the state effectively prevent profitable returns.

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Despite the greatly increased production of almonds in the United States, the nation now produces only one-fourth of the almonds consumed in this country. The remainder is imported, mainly from Italy, Spain, and France. Significant changes in the trend of imports have occurred during the past thirteen years. Until 1916 imports remained fairly stable. In 1916, however, imports began to rise rapidly and continued upward until 1919. A large part of this increase was probably due to the dislocation of the European market resulting from the war. Since 1921 imports have declined rapidly and continuously, until at the present time they are only slightly above the pre-war level. Three factors have contributed to this decline: (1) increase in the tariff, (2) recovery of European markets, and (3) increased use of California shelled almonds in the United States.

It is not likely, however, that there will be a further substantial decrease in imports during the next few years. A considerable part of the effect of the increase in the tariff and the recovery of European markets on the decline in imports has already occurred.

The United States supply of almonds is, therefore, derived from two sources: California and foreign countries. Changes in the per-capita supply available for consumption have been chiefly responsible for the changes in the trend of purchasing power of California almonds. During the five years previous to 1915 no definite upward or downward trend in purchasing power is apparent, and likewise the supply of almonds remained fairly stationary. Between 1915 and 1920, however, there was a definite downward trend in purchasing power. The most important cause for this downward trend was the rapid increase in the per-capita supply, which rose from an average of 0.48 pounds in 1914-1915 to an average of 0.88 pounds in 1918-1919. Consumers would not buy this greatly increased quantity except at relatively lower prices. The increase in the supply of almonds during this period was a result of the two conditions already mentioned; namely, increased production in California and increased imports.

After 1920 the trend of purchasing power turned upward, and has continued upward since then. However, it has not yet reached the level that it occupied prior to the war. This upward trend in purchasing power was largely a result of the decline in the supplies available for consumption. The substantial increase in California production during this period was not sufficient to offset the large decrease in imports.

Although there has been a decline in the per-capita consumption of almonds in the United States during the past few years, it is still substantially above the pre-war level. During the three-year period from 1913 to 1915 the average per-capita consumption amounted to 0.48 pounds, as compared with an average of 0.68 pounds for the three years from 1924 to 1926. This is an increase of 42 per cent. One reason for this increase in per-capita consumption is the lower level of purchasing power. Consumers can now buy almonds at relatively lower prices than they could before the war. Consequently they eat more of them.

The average purchasing power during the past three years, however, is only 17 per cent below the pre-war level, whereas the per-capita consumption is 42 per cent above. This indicates that there has been a real increase in the demand for almonds. This increased demand has been largely a result of the more extensive use of shelled almonds. The bakery and confectionery trades are now using more almonds in the preparation of their products than they did a few years ago. On the other hand, there seems to have been little, if any, increase in the per-capita consumption of unshelled almonds. The market for unshelled almonds is essentially a seasonal one and of short duration. The bulk of them are consumed during the holiday season.

The California almond industry is gradually emerging from the depression which was most acute in 1920. The chief factors responsible for this recovery seem to be of a fairly permanent nature. They are decreased imports and increased demand. On the other hand, the peak in the long upward trend in California production has not yet been reached. In addition, a further decrease in imports or an increase in demand cannot safely be counted on. Furthermore, the wide fluctuations in production from year to year complicate the marketing problem. For these reasons any widespread planting of almonds does not appear to be justified. A conservative expansion may be desirable, but only on land particularly adapted to the production of this crop and in climatic zones favorable to it. The best outlook for California almond growing is through increasing the yield per acre. Yield is chiefly a matter of varieties, cultural methods, and favorable climatic location, including proper moisture conditions and freedom from frost. Many almond orchards are so located that they will continue to be unprofitable for the remainder of their lives.

### ALMOND ACREAGE IN CALIFORNIA

*The Place of California in the Almond Industry.*—Practically all of the United States acreage of almonds is in California. According to the Fourteenth Census of the United States, the total almond acreage in this country in 1920 amounted to approximately 55,000 acres, of which 99 per cent were in California. Almond trees were reported in fourteen states other than California, but the acreage in these states was so small as to be negligible from a commercial standpoint. Although the almond trees themselves grow well in many places in the United States, they seldom produce a crop in sections outside of California. Their habit of early blooming renders the blossoms particularly liable to injury from spring frosts. Consequently there has been no tendency for the other states to increase their acreage of almonds. California has, therefore, a virtual monopoly in the production of almonds as far as the United States is concerned. Certain foreign countries, however, produce large quantities of almonds which compete directly with our almonds in the markets of the United States.

*Distribution of the Almond Acreage in California, 1927.*—At the present time there are over a hundred thousand acres of almonds in California. The distribution of this acreage by counties is shown in figure 1. Although almonds are grown in forty-one of the fifty-eight counties in the state, the large producing areas are confined to comparatively few counties. Three-fourths of the total almond acreage in 1927 was in the seven counties of San Luis Obispo, Yolo, Butte, San Joaquin, Colusa, Stanislaus, and Merced; San Luis Obispo County alone had one-third of the total. The combined acreage in the seventeen counties listed in figure 1 amounted to 97,558 acres, or 96 per cent of the total. The acreage in each of the other twenty-four counties which produce almonds is relatively small.

Of the 101,691 acres of almonds in California in 1927, exclusive of 1926 plantings, 87,074 were in bearing and 14,617 were not in bearing. The relative importance of the main almond-producing counties from the standpoint of bearing acreage is shown in figure 2. The three counties of San Luis Obispo, Yolo, and Butte contain approximately one-half of the total bearing acreage in the state, and San Luis Obispo County alone contains over one-fourth.

## ALMOND ACREAGE, CALIFORNIA, 1927 (BEARING AND NON-BEARING)

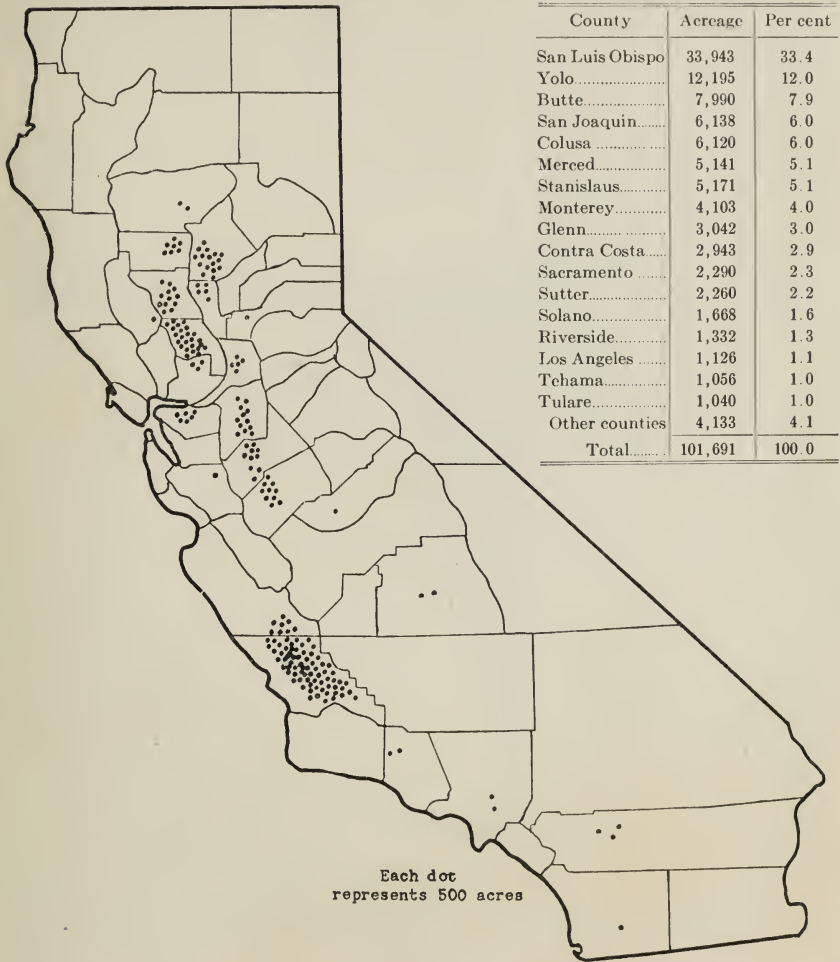


Fig. 1.—Although almonds are grown in forty-one of the fifty-eight counties in the state, the large producing areas are confined to comparatively few counties.

Data compiled from table 7.

*Upward Trend in Bearing Acreage since 1914.*—The present bearing acreage of 87,074 acres is largely a result of a relatively recent growth. For many years before 1914 the bearing acreage in the state remained practically stationary at about 15,000 acres.<sup>3</sup> Some plant-

<sup>3</sup> Thirteenth Census of the United States 5:723. 1910. Trees converted to acres on the basis of seventy trees per acre.

ings were made, but they were only sufficient to replace the acreage taken out. Beginning in 1915, however, the bearing acreage has increased rapidly and continuously. Each year for the past thirteen years the bearing acreage has been larger than it was in the preceding year. This is shown by the solid black bars in figure 3.

PERCENTAGE OF THE CALIFORNIA BEARING ALMOND ACREAGE IN MAIN ALMOND PRODUCING COUNTIES, 1927

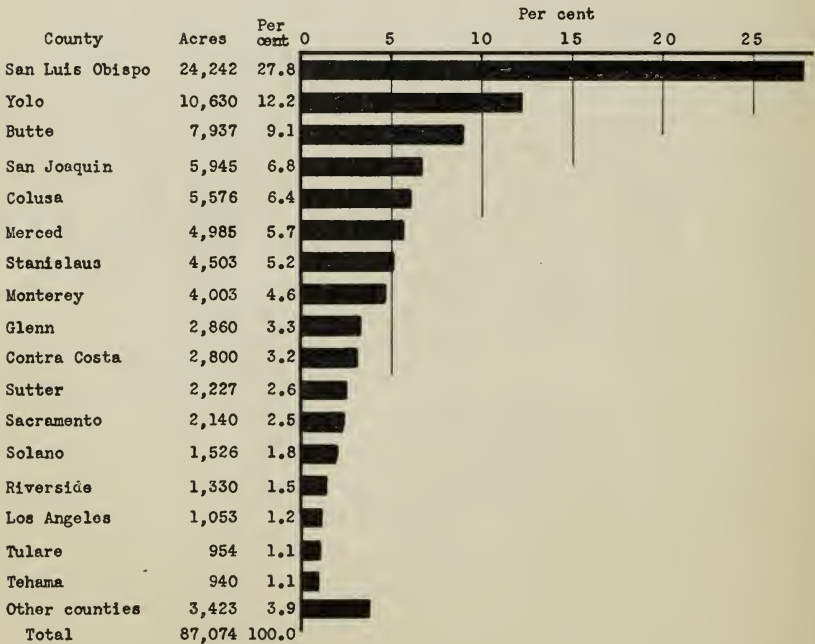


Fig. 2.—Approximately one-half of the bearing almond acreage in California is in the three counties of San Luis Obispo, Yolo, and Butte.

Data from table 7.

A large part of the enormous increase in acreage occurred during a period when almond prices were relatively low as compared with the prices of most farm products (see fig. 10, p. 19). It is evident, therefore, that factors other than high prices furnished the main stimulus for the large plantings. Probably the most important single factor was the subdivision activities of large companies. These companies planted almonds on their lands apparently in order to make them more salable.



BEARING ACREAGE OF ALMONDS IN CALIFORNIA, 1914-1927, AND FORECAST OF BEARING ACREAGE, 1928-1930

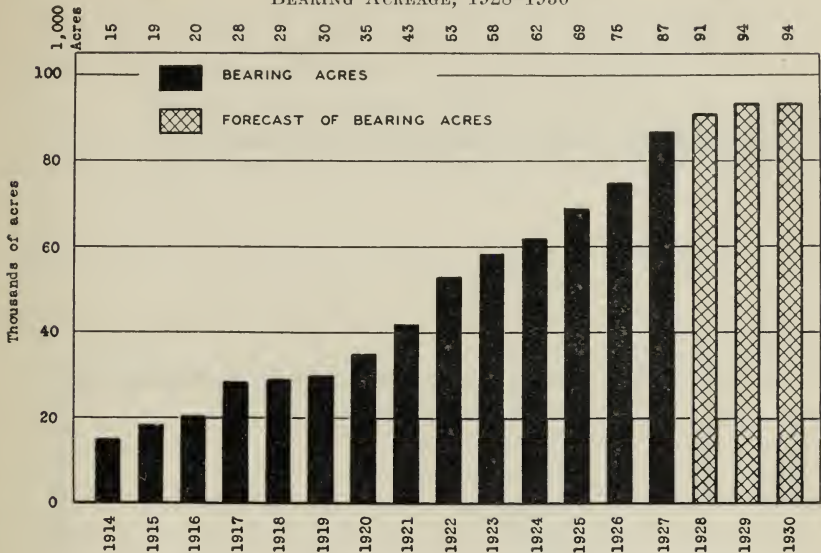


Fig. 3.—The bearing acreage of almonds in California has increased rapidly and continuously since 1914.

Data from table 6.

ACREAGE PLANTED TO ALMONDS IN CALIFORNIA, 1921-1926

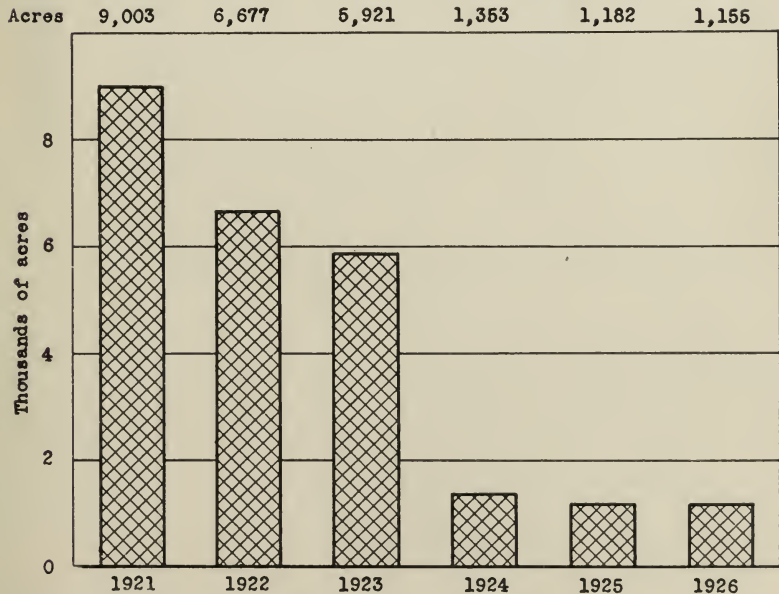


Fig. 4.—Only a small acreage of almonds has been planted in California during the three years from 1924 to 1926

Data from California Cooperative Crop Reporting Service.

*Forecast of Bearing Acreage.*—The peak in this upward trend in bearing acreage will be reached in 1929, according to the forecasts made by the California Cooperative Crop Reporting Service (fig. 3). At that time it is estimated that there will be approximately 94,000 acres of almonds in bearing, or 7,000 acres more than at present. During the years immediately after 1929, it is expected that the acreage will remain stationary. The plantings during the three years 1924, 1925,

ABSOLUTE INCREASE IN BEARING ACREAGE OF ALMONDS IN MAIN PRODUCING COUNTIES IN CALIFORNIA FROM 1921 TO 1927

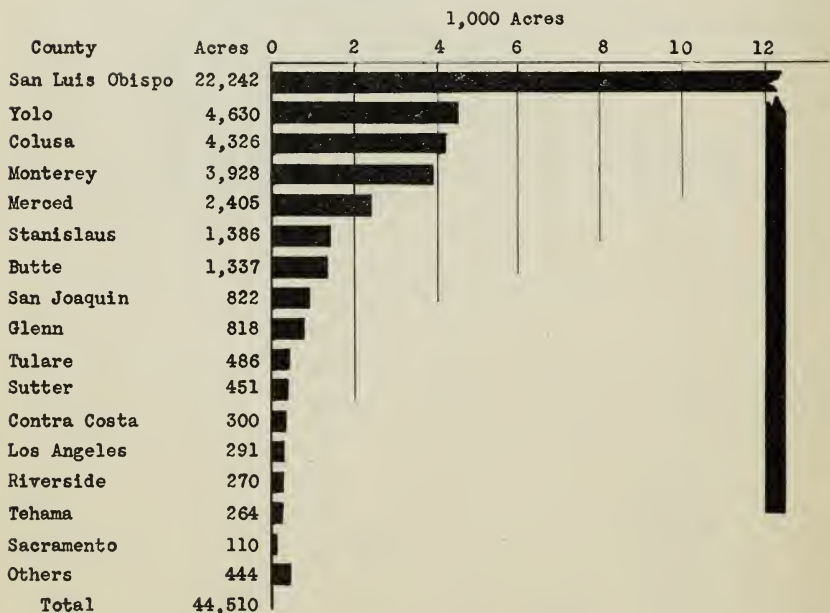


Fig. 5.—One-half of the total increase in bearing acreage since 1921 has occurred in San Luis Obispo County.

Data compiled from table 7.

and 1926 amounted to only 1,200 acres on the average as compared with 9,000 acres in 1921 (fig. 4). It is doubtful if the planting of only 1,200 acres a year will more than fully replace the acreage which will normally go out of bearing. It seems likely, therefore, that after 1929 there will be no further increase in bearing acreage for at least three years. What takes place after that will depend upon the extent of plantings during the coming years.

*Where the Increase in Bearing Acreage since 1921 Has Occurred.*—Figure 5 shows where the increase from 42,564 acres in 1921 to 87,074 acres in 1927 has occurred. It is particularly striking that an increase

of 22,242 acres, which is equal to one-half of the total increase in the state, has taken place in one county alone—San Luis Obispo—and that 90 per cent of the total increase occurred in the seven counties of San Luis Obispo, Yolo, Colusa, Monterey, Merced, Stanislaus, and Butte.

*Location of Non-Bearing Acreage, 1927.*—Of the 14,617 acres of almonds not in bearing in California in 1927, exclusive of 1926 plantings, 9,701 acres, or two-thirds of the total, were in San Luis Obispo County. The non-bearing acreage in each of the other counties was relatively small. Only three of them—Yolo, Stanislaus, and Colusa—contained over 200 acres each. Yolo had 1,565 acres not in bearing, Stanislaus, 668 acres, and Colusa, 544 acres. These three counties together with San Luis Obispo County, contained 12,498 acres, or 85.5 per cent of the state total.

The figures on non-bearing acreage given above, together with the figures on bearing acreage given on page 8, indicate the importance of the Paso Robles district, which includes San Luis Obispo and Monterey counties, from the standpoint of almond acreage. Taking into consideration the present acreage coming into bearing, it is estimated that by 1930 this one district will have at least 34,000 acres in bearing, or over one-third of the total forecasted bearing acreage in the state. In 1921 this district had less than 5 per cent of the bearing acreage.

#### ALMOND PRODUCTION IN CALIFORNIA

*Upward Trend of Production.*—The relative changes in the production of almonds in California between 1914 and 1927 are shown in figure 6. One type of change shown in this curve of production is a pronounced upward trend. The average production of almonds in 1914 amounted to 2,600 tons as compared with the present average production of 13,000 tons. This is an increase of 10,400 tons, or 400 per cent during a period of thirteen years. Since 1919 the upward trend has been characterized by a uniform amount of increase rather than by a uniform rate of increase. Each year for the past eight years the average production of almonds, as indicated by the line of trend, has been about 900 tons larger than in the preceding year. Relative to the size of the crop, however, the average increase is less now than formerly. For example, the average increase of 900 tons between 1926 and 1927 was an increase of only 7.4 per cent; whereas the same increase in tons between 1919 and 1920 was an increase of 15.5 per cent. Thus the trend line in figure 6, which is plotted on a relative basis, shows a decided tendency to level off.

*Fluctuations in Production.*—The second type of change shown in the curve of production in figure 6 is the short-time fluctuations. The production of almonds fluctuates widely from year to year, being sometimes much above and sometimes much below the average. These fluctuations cannot generally be controlled by the growers, since they are caused in the main by variations in climatic conditions. Almonds are particularly subject to damage by frost. In some sections the hazard from frost is being overcome by orchard heating, but as yet this practice is not extensive. Again, since a large proportion of the almond orchards are not irrigated, variations in the amount and distribution of the rainfall from year to year result in considerable fluctuations in production. According to Taylor and Philp, "Continued rainy, damp and cold weather at blooming time is apt to destroy the pollen and thus prevent the fertilization, without which a crop is impossible."<sup>4</sup> The growth of 'shothole' fungus in the blossoms and fruit is also encouraged by much damp weather in the spring, which often causes the loss of a considerable portion of the crop.

The tendency has been for these fluctuations in production to become greater, both absolutely and relatively. The greater relative fluctuations during recent years as compared with earlier years is shown in figure 6. The average variation in production during the five-year period from 1914 to 1918, amounted to 17 per cent, as compared with the average variation of 44 per cent during the last five years. This indicates that the recent plantings were more generally made in localities in which the variations in climatic conditions are pronounced.

These wide fluctuations in production from year to year complicate the marketing problem. In order to dispose of the large crop in 1926, for example, it was necessary for the marketing organizations in California to obtain many new customers. Many of the new customers had previously bought foreign almonds. If their trade is to be retained, it is necessary that the marketing organizations in this state be able to supply them regularly with their future requirements. If this cannot be done, some of them may resume the purchase of foreign almonds. It may be more difficult to persuade them to buy California almonds again, after having once obtained and lost their business.<sup>5</sup>

*Yield per Acre.*—The rapid increase in almond production has been accompanied by a decline in yield per acre. The 1914–1916

<sup>4</sup> Taylor, R. H., and G. L. Philp. The almond in California. California Agr. Exp. Sta. Circ. 284:11. 1923.

<sup>5</sup> Tucker, T. C. Seventeenth annual report of the manager. The Minute Book 1(22):8. 1927.

average yield per acre amounted to 336 pounds, the 1925–1927 average yield to 306 pounds. This is a decrease of 30 pounds, or 9 per cent. Although a decrease of 30 pounds per acre does not appear to be great, it means, when applied to the present bearing acreage in the state, that the production is 1,300 tons smaller than it would have been had no decline in yield occurred.

PRODUCTION OF ALMONDS, CALIFORNIA, 1914–1927

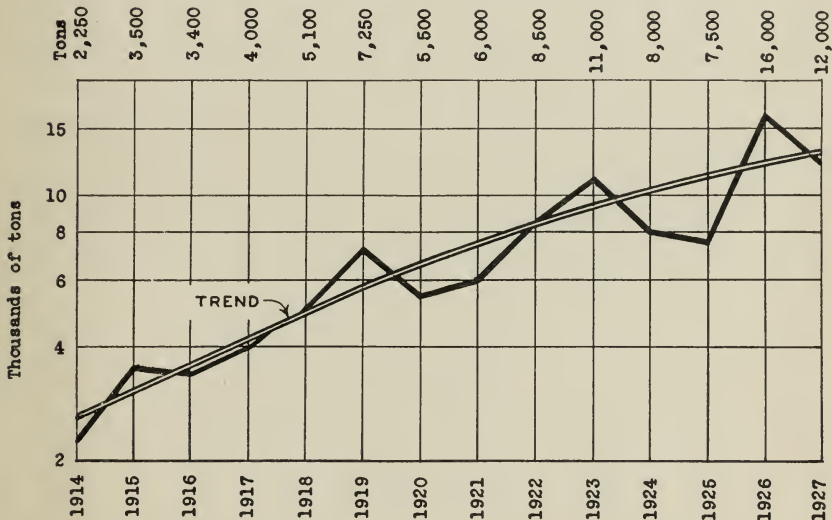


Fig. 6.—There has been a pronounced upward trend in almond production in California since 1914.

Data from table 6.

A portion of this decline in yield is probably only temporary, however. A relatively large proportion of the trees listed as bearing in the last five years were not yet in full bearing.<sup>6</sup> Consequently there may be some increase in yield during the next few years as a result of the increase in the average age of the trees. Again, some decline in yield may have occurred because of the neglect of the orchards during the period of relatively low almond prices.<sup>7</sup> With considerably higher prices now prevailing, it is likely that growers will find

<sup>6</sup> The age at which an almond tree is considered to be in bearing varies in different sections of the state. For the state as a whole the average is about five years. Taylor and Philp point out that almond trees should continue to increase in production from year to year, allowing for failures due to frost and unfavorable conditions, from the time they come into bearing up to twelve years of age.

<sup>7</sup> See page 11.

it worth while to take better care of their orchards, which may result in increased yields. On the other hand, a part of the decline in yield is likely to be permanent. The available data indicates that the newer plantings were generally made in sections less adapted to high production.

The most serious aspect of the average yield of almonds in this state is not that it has declined, since a part of the decline is only temporary, but that it is low. A yield of only 306 pounds per acre, which was the average for the state during the three years from 1925 to 1927, effectively prevents a satisfactory income. Even with the relatively high prices which prevailed during these three years, the average gross income amounted to less than \$60 per acre. From a survey of 149 orchards in 1925, Adams found that it cost \$46.60 per acre on the average to pay the actual operating expenses.<sup>8</sup> After deducting, in addition to the actual operating expenses, interest on investment, depreciation on trees, and a charge for the use of operating capital, it is evident that there is very little, if any, left to pay the farmer for his work as manager.

TABLE 1  
ALMONDS, CALIFORNIA—RELATION OF YIELD PER ACRE TO COST OF  
PRODUCTION, 1925

Average yield pounds	Average cost per pound cents	Number of orchards	Acreage
Less than 250.....	35.3	44	1,755
250 to 500.....	14.6	43	1,279
500 to 750.....	10.7	29	804
750 to 1,000.....	9.8	19	525
1,000 and over.....	6.8	14	214

Source of data: Adams, R. L., Cost of producing almonds in California, a progress report. California Agr. Exp. Sta. Bul. 442:49. 1927.

That larger returns may be obtained by increasing yields is shown in table 1. The average cost per pound in 1925 on forty-four orchards having a yield of less than 250 pounds per acre, was 35.3 cents; on the other hand, the average cost per pound on fourteen orchards having a yield of 1,000 pounds and over per acre, was only 6.8 cents. Growers having the high-yielding orchards made a profit; those having the low-yielding orchards could scarcely have made a profit if the prices had been twice as high.

<sup>8</sup> Adams, R. L. Cost of producing almonds in California, a progress report. California Agr. Exp. Sta. Bul. 422:46. 1927.

## VARIETIES OF ALMONDS

*Principal Varieties Grown in California.*—There are many varieties of almonds grown in California, but only a few of them are of commercial importance. The principal commercial varieties are the Nonpareil, IXL, Ne Plus Ultra, Drake, Texas, and Peerless. These six varieties constitute approximately 93 per cent of the total crop. Their relative importance during the past four years is shown in figure 7. The Nonpareil occupies first place with 25.1 per cent of the

RELATIVE IMPORTANCE OF PRINCIPAL VARIETIES OF ALMONDS IN CALIFORNIA,  
AVERAGE, 1923-1926

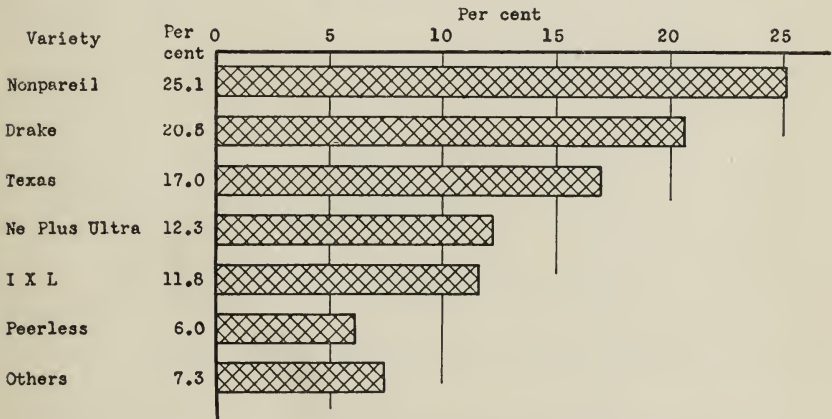


Fig. 7.—The Nonpareil is the most important almond variety grown in California.

Data compiled from California Almond Growers Exchange. The Minute Book 1(22):10. 1927.

total production. The Drake is next in importance with 20.5 per cent, followed by the Texas, Ne Plus Ultra, IXL, and Peerless in the order named. The three papershell varieties—Nonpareil, IXL, and Ne Plus Ultra—which are also the high-priced varieties, together constitute 49.1 per cent of the total crop.

*Choice of Varieties to Plant.*—The growers' choice of varieties to plant is limited to some extent by the fact that practically all of the varieties are self-sterile and some of them are even inter-sterile. Taylor and Philp<sup>9</sup> point out that it is necessary to interplant varieties which are interfertile and which blossom at about the same time in order to insure proper pollination. Consequently a number of different varieties are found in each orchard.

<sup>9</sup> Taylor, R. H., and G. L. Philp. The almond in California. California Agr. Exp. Sta. Cir. 284:5. 1925.

After providing for adequate pollination, however, many growers have the choice of planting any one of the several varieties, since there is no great difference in the behavior of them under favorable conditions. The varieties that it will be most profitable to plant can be determined, at least partially, by a comparison of the gross returns per acre, obtained by multiplying the average yields per acre by the average prices per pound. The yields which growers should consider are the average yields for a period of years, which have been obtained under their particular conditions. The relative yields of the different varieties will, of course, vary from district to district, but for the state as a whole Taylor and Philp (p. 51) believe that the Nonpareil and the Drake will produce larger yields on the average than the IXL or Ne Plus Ultra.

PRICES PAID TO GROWERS FOR NONPAREIL, IXL, NE PLUS ULTRA, AND DRAKE, AVERAGE, 1922-1926

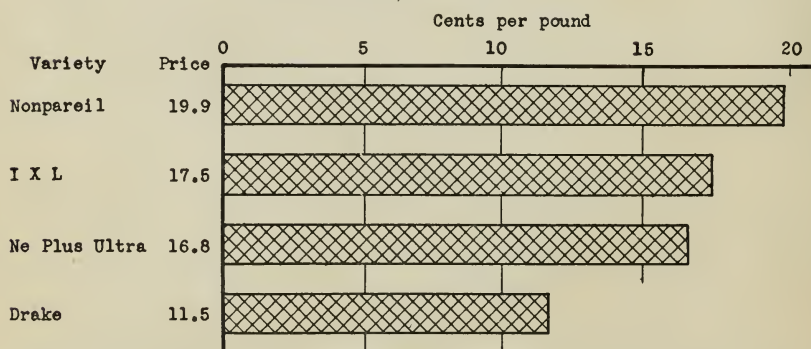


Fig. 8.—The differences in the lengths of the bars show the normal price differentials between these four varieties of almonds since 1921.

Data compiled from table 8.

*Average Price Differentials between Varieties.*—Growers should give consideration not only to the average yields, but also to the average prices which have prevailed over a period of years. The average prices of the four varieties Nonpareil, IXL, Ne Plus Ultra, and Drake for the five-year period from 1922 to 1926 are given in figure 8. The Nonpareil has averaged the highest in price with a differential in its favor of 2.41 cents above the IXL, 3.19 cents above the Ne Plus Ultra, and 8.41 cents above the Drake.

The Nonpareil and IXL are equally attractive for table use. The higher price of Nonpareil is largely due to the fact that it has an additional outlet, the shelled market. The IXL cannot profitably be shelled because of the low percentage of meats. This is also true of the Ne Plus Ultra. From the standpoint of table use, the Ne Plus



Ultra is less attractive than the Nonpareil and IXL because of its tendency to have gummy kernels. The relatively low price of Drakes is largely due to the fact that it has a medium-thick hard shell which is not easily broken with the fingers, and a low percentage of meats. Because of the low percentage of meats, it has not been profitable to shell the Drake. Consequently it has been marketed entirely in the shell, and as a table nut it cannot compete with the papershell varieties.

RELATIVE PRICES OF ALMONDS AND ALL COMMODITIES, 1910-1927  
(AVERAGE 1910-1914 = 100)

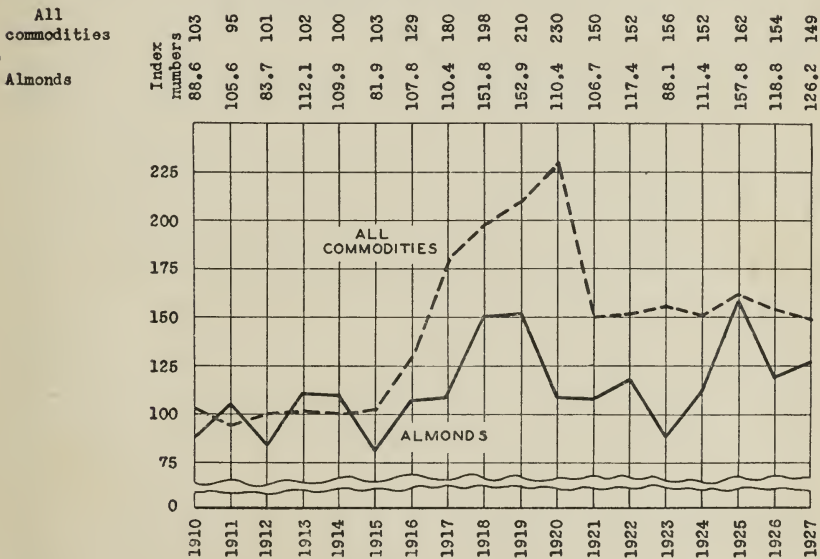


Fig. 9.—During the war, prices of all commodities advanced much higher than the prices of almonds and have stayed at a higher level since the war. Data from table 8.

The price differential between Drakes and the papershell varieties is much greater now than before the war. Between 1910 and 1914 Drakes brought, on the average, 72.5 per cent of the price of Nonpareils, as compared with 57.8 per cent during the last five years.

PRICES AND PURCHASING POWER

*Annual Average Prices.*—The annual average prices which growers have received for their almonds since 1910 are shown by the solid line in figure 9. Between 1915 and 1919 the prices of almonds increased substantially. It is misleading, however, to assume that almond growers were as much more prosperous in 1919 than in 1915 as is

shown by the rise in prices. Their expenses also increased during this period, as is shown by the broken line which represents the prices of all commodities. In fact, the prices of all commodities increased even more than the price of almonds, so that almond growers were really not as well off in 1919 as in 1915; that is, almond growers could not buy as much of other commodities with the money they received for a pound of almonds in 1919 as they could in 1915. In order to obtain a correct picture of the influence of changing prices upon the prosperity of the growers, it is necessary to correct the prices of the particular product which the grower sells by the prices of the things he buys. We then obtain a figure commonly known as purchasing power.

*Trend of Purchasing Power.*—The annual average purchasing power of almonds from 1910 to 1927 is shown by the solid black line in figure 10. Significant changes in the trend of purchasing power have occurred during this period. These changes have been largely a result of changes in the per-capita supply of almonds available for consumption in the United States. The per-capita supply is shown by the broken line in figure 10. During the first five years of this period no definite upward or downward trend in purchasing power is apparent, and likewise the supply of almonds remained practically stationary, at least for the two years for which data are available. Between 1915 and 1920, however, there was a definite downward trend in purchasing power. The most important cause of this downward trend was the rapid increase in the per-capita supply, which rose from an average of 0.48 pounds in 1914–1915 to an average of 0.88 pounds in 1918–1919. Consumers would not buy this greatly increased quantity except at relatively lower prices. The increase in the supply of almonds during this period was a result of two conditions: (1) the increased production in California (see p. 11), and (2) the increased imports from Europe (see p. 21).

After 1920 the trend of purchasing power turned upward, and has continued upward since then. However, it has not yet reached the level that it occupied before the war. This upward trend in purchasing power was largely a result of the decline in the supplies available for consumption. The substantial increase in California production was not sufficient to offset the large decrease in imports.

A further substantial increase in purchasing power during the next few years should not be expected. The supplies of almonds in this country are not likely to fall much below the present level. California production has not yet reached the peak, and a further decrease in imports is not likely.

UNITED STATES PER-CAPITA SUPPLY OF ALMONDS (AVERAGE 1913-1915 = 100) AND PURCHASING POWER OF CALIFORNIA ALMONDS (AVERAGE 1910-1914 = 100)

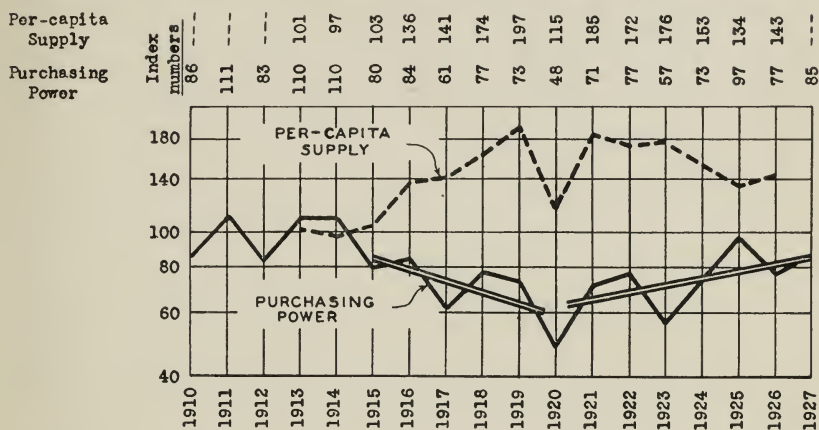


Fig. 10.—Changes in the trend of purchasing power of California almonds were caused mainly by changes in the United States per-capita supply of almonds.

Data from tables 8 and 9.

PRODUCTION AND PURCHASING POWER OF CALIFORNIA ALMONDS, 1922-1926

Production 100 tons	85	110	80	75	160	120
Purchasing Power	77	57	73	97	77	85

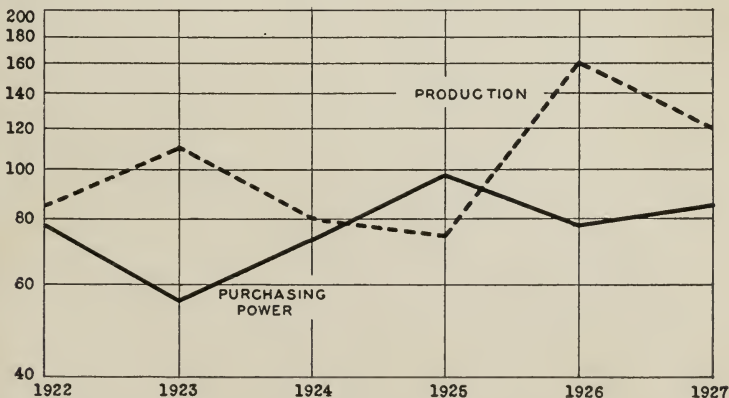


Fig. 11.—An important cause for the fluctuations in the purchasing power of almonds from year to year is variations in domestic production.

Data from tables 6 and 8.

*Fluctuations in Purchasing Power from Year to Year.*—The purchasing power of almonds fluctuates widely from year to year. These fluctuations are caused by many factors. One of the most important is changes in the domestic production. The close relationship between changes in production and changes in purchasing power for the past six years is shown in figure 11. Throughout this period purchasing power varied inversely with production. High production was accompanied by low purchasing power; low production by high purchasing power.

This relationship is not perfect, however, showing that other factors besides domestic production affect prices. One of these factors is imports. In turn, imports are affected by the prices in this country. Without a very detailed analysis, which is beyond the scope of this bulletin, it is not possible to measure the relationship between imports and domestic prices. In general, however, high domestic prices tend to stimulate imports, and increased imports tend to check any further rise in domestic prices.

#### UNITED STATES CONSUMPTION OF ALMONDS

During the past three years, the United States has consumed an average of 39,486 tons in equivalent of unshelled almonds annually. This amounts to 0.68 pounds for each person. The relative changes in the estimated per-capita consumption of almonds in the United States between 1913 and 1926 are represented by the broken line in figure 10.<sup>10</sup> Although the present per-capita consumption is relatively small, it is substantially larger than before the war, when it amounted to only 0.48 pounds annually. The increase between 1913–1915 and 1924–1926 has amounted, therefore, to 0.20 pounds, or 42 per cent.

One reason for this increase has been the decline of 17 per cent in the purchasing power of almonds between 1913–1915 and 1924–1926. Consumers can now buy almonds relatively cheaper than they could before the war. Consequently they eat more of them. The lower purchasing power of almonds, however, does not account for all of the increase in per-capita consumption, since per-capita consumption has increased much more than purchasing power has declined. There has been a real increase in the demand for almonds. A real increase in the demand for a commodity has occurred when consumers buy more of that commodity at the same price or buy the same amount of that commodity at a higher price, assuming, of course, that there has been no change in the value of the dollar.

<sup>10</sup> Carryover data on almonds are not available. Consequently the best estimates of per-capita consumption of almonds are the per-capita supplies of almonds available for consumption.

The increased demand for almonds has been largely a result of the more extensive use of shelled almonds. The bakery and confectionery trades are now using a larger volume of almonds in the preparation of their products than they did a few years ago. The amount of this increase cannot be measured accurately, because data on the amount of almonds shelled in California are not available. A fairly definite idea, however, can be obtained from the proportion that is imported in the shelled and unshelled forms. During the past three years, 95.3 per cent of the total imports were shelled as compared with 89.7 per cent during the three years from 1913 to 1915. Imports of unshelled almonds were 40 per cent smaller in 1924-1926 than in 1913-1915, while imports of shelled almonds were 42 per cent larger.

This information indicates that there has been little if any increase in the per-capita consumption of unshelled almonds. The market for unshelled almonds is essentially a seasonal one and of short duration. The bulk of them are consumed during the holidays.

Just how much effect the prospective increase in production of walnuts and pecans will have upon the demand for almonds is not certain. It seems probable, however, that almonds will be subjected to keener competition in the consuming markets during the next few years than they have been in the past. Large plantings of walnuts have been made in California during recent years, a substantial part of which have not yet reached the full bearing age. Pecan acreage in the southern states, particularly in Georgia and Texas, has also been increasing very fast. In 1924 over one-half of the total pecan acreage in the United States was not yet in bearing.

#### UNITED STATES IMPORTS OF ALMONDS

Although the production of almonds in the United States has increased substantially (fig. 6), the nation now produces only 26.5 per cent of the almonds consumed in this country (fig. 12). Before the war the proportion was still smaller, amounting to only 11.3 per cent.

*Changes in Almond Imports.*—The changes in almond imports, in equivalent of unshelled almonds, between 1913 and 1926 are shown in figure 13. Before 1916, imports remained fairly stable at about 22,000 tons a year. Beginning in 1916, however, imports began to rise rapidly. They continued upward until 1919, reaching a high point of 43,167 tons in that year. A large part of this increase was probably due to the dislocation of the European markets during the war. In 1920, imports were reduced by almost one-half. This great decline

was only temporary, however. The following year they were almost as large as in 1919.

Since 1921 imports have declined rapidly and continuously. Each year for the past five years imports have been smaller than in the preceding year. Three factors have contributed to this decline:

(1) In 1922 the tariff on shelled almonds was increased from 4 cents a pound to 14 cents a pound, and on unshelled almonds from 3 cents a pound to 4.75 cents a pound. Since approximately 95 per cent of the total imports are shelled, the increase of 10 cents a pound in the tariff has probably had a favorable effect upon the almond situation in the United States.

PERCENTAGE OF THE UNITED STATES SUPPLY OF ALMONDS PRODUCED IN CALIFORNIA AND IMPORTED FROM FOREIGN COUNTRIES, AVERAGE 1914-1916 AND 1924-1926

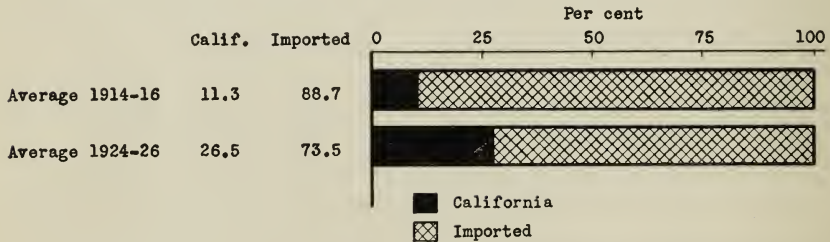


Fig. 12.—Although the proportion of the United States supply of almonds produced in this country has increased substantially, it is still relatively small.

Data compiled from table 9.

(2) Some of the European countries which had greatly reduced their purchases of almonds during and immediately after the war have come back into the market. In 1925 Germany purchased 35 per cent of the total exports from Italy, as compared with 10 per cent in 1923. On the other hand, only 14 per cent of the Italian exports were sent to the United States in 1925, as compared with 26 per cent in 1923.

(3) During recent years considerable effort has been made by the marketing organization in California to increase the sale of shelled almonds. For example, the California Almond Growers Exchange has increased its sale of shelled almonds from 133,000 pounds in 1922 to 3,852,000 pounds in 1926. Until recent years it was the general opinion of the trade that the quality of California shelled almonds was inferior to those imported from Europe. This opinion has been largely changed. According to the reports of the California Almond Growers Exchange, many buyers who had previously used only imported almonds are now using large quantities of domestic almonds.

It should not be assumed, however, that there will be a further substantial decrease in imports during the next few years. It is probable that the most pronounced effect of the first two of the factors mentioned above has already occurred. The rise in almond prices in this country has made it easier for importers to pay the additional tariff duty. European markets have made a considerable recovery, and it is not likely that they will increase their purchases of almonds as much during the next few years as they have during the past few years. The present normal production in the main foreign almond-

UNITED STATES IMPORTS OF ALMONDS, 1913-1926  
(In equivalent of unshelled)

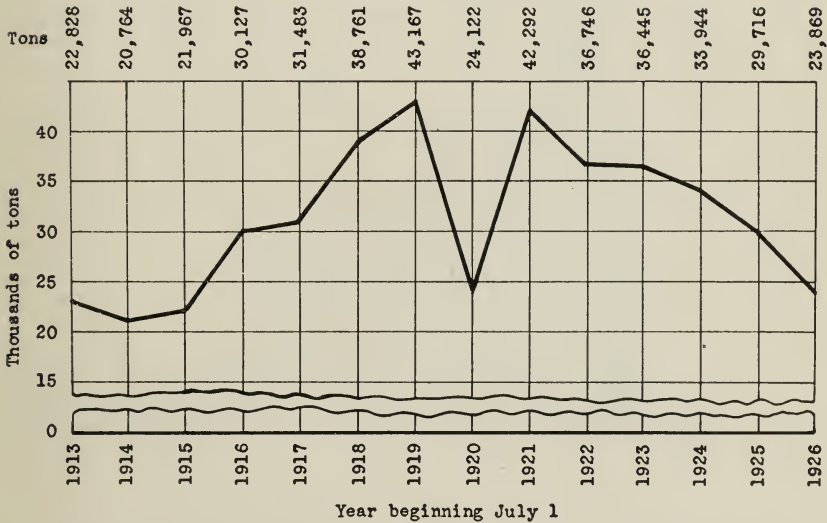


Fig. 13.—Imports have declined steadily since 1921, and at the present time they are close to the pre-war level.  
Data from table 9.

producing countries is fully as large as it was a few years ago. Most of these countries produce a much larger volume of almonds than they consume; consequently the surplus must be sold in other countries. The United States has long been an important market for a portion of this surplus.

*Seasonal Variation in Imports.*—The average monthly imports of almonds for the four-year period beginning September, 1923, are shown in figure 14. The black portion of the bars represent the imports of unshelled almonds, and the shaded portion, the shelled almonds in equivalent of unshelled. The imports of all almonds are normally heaviest during the four months from October to January,

with the peak of imports usually in November. Approximately 58 per cent of the total imports are received during these four months. After January, imports begin to decline, although they are of substantial volume until May. During the next five months, however, they are relatively small, amounting on the average to only 14.5 per cent of the total for the year.

MONTHLY IMPORTS OF ALMONDS, UNITED STATES, AVERAGE 1923-1924 TO 1926-1927

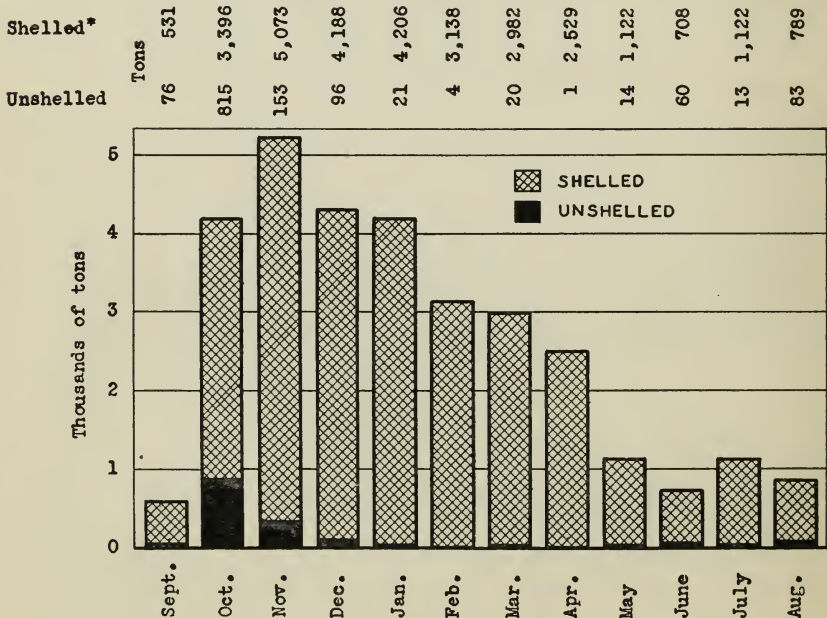


Fig. 14.—Over one-half of the United States imports of almonds come in during the four months from October to January.

Data from table 11.

\* Shelled converted to unshelled equivalents.

The importing season on unshelled almonds is relatively short. The bulk of them come in during the two months of October and November. The chief reason for this is that the principal demand for unshelled almonds is during the holiday season. As compared with total imports, however, the imports of unshelled almonds are never very large. Even during October, when they are heaviest, they amount to only 19.4 per cent of the total imports.

*Origin of Imports.*—The bulk of the United States imports of almonds comes from two European countries, Spain and Italy (table 2). During the past three years these two countries have contributed,



on the average, 91.2 per cent of our total imports, and Spain alone contributed 57.1 per cent of the total. France was the third most important source of our foreign supplies. Our imports from France, however, were relatively small, amounting to only 6.2 per cent of the total.

TABLE 2  
UNITED STATES IMPORTS OF ALMONDS BY COUNTRIES OF ORIGIN,  
AVERAGE 1913-1915 AND 1924-1926

Country	Average 1913-15		Average 1924-26	
	<i>tons</i>	<i>per cent</i>	<i>tons</i>	<i>per cent</i>
Spain.....	12,775	58.5	17,473	57.1
Italy.....	6,712	30.7	10,429	34.1
France.....	1,472	6.7	1,893	6.2
Other countries.....	894	4.1	790	2.6
Total.....	21,853	100.0	30,585	100.0

Data compiled from table 10.

For many years, Spain, Italy, and France have furnished us with practically all of our imported almonds. Between 1913 and 1915 the combined imports from these three countries amounted to 95.9 per cent of the total as compared with 97.4 per cent during the past three years. The proportion supplied by each country varies from year to year, of course, because of changes in their production. But over a series of years, except for the period during and immediately after the war when imports from France were very small, the average proportion supplied by each of the countries has not changed greatly.

#### FOREIGN ALMOND PRODUCTION

The total production of almonds, outside of the United States, is largely confined to the countries bordering on the Mediterranean Sea. Detailed information on the almond situation in these countries is not available at the present time. The information presented here, although it is fragmentary, gives some indication of the situation.

*Italy.*—Italy is the largest almond-producing country in the world. The bulk of the Italian crop is produced in the Bari district and on the Island of Sicily. The annual production of almonds in Italy from 1916 to 1926 is given in table 3, column 1. These figures indicate that there has been a substantial increase in production during the past eleven years. The 1916-1918 average production amounted to 100,100 tons as compared with an average production of 125,800 tons during the three-year period from 1924 to 1926.

TABLE 3  
PRODUCTION OF ALMONDS IN CERTAIN FOREIGN COUNTRIES, 1916-1926

	Italy	Spain	France	Greece	Tunis	Palestine
	<i>tons</i>	<i>tons</i>	<i>tons</i>	<i>tons</i>	<i>tons</i>	<i>tons</i>
1916.....	121,100				2,000	
1917.....	74,600				2,900	
1918.....	104,600			4,900	2,400	
1919.....	60,900			1,500	3,000	
1920.....	151,400			7,200	2,600	
1921.....	103,200		7,800	2,400	3,900	480
1922.....	206,600	81,400	4,500	2,700	1,800	510
1923.....	119,000		9,200	3,400	2,100	520
1924.....	146,100		8,200	2,600	1,400	570
1925.....	68,500	99,000	5,000	2,800	2,000	680
1926.....	162,700	107,000				

Sources of data:

Column 1. Years 1916-1922: U. S. Dept. Agr. Bur. Agr. Econ. Italian almond industry. Foreign Crops and Markets 8: 19; 392. 1924. Years 1923-1925: U. S. Dept. Agr. Bur. Agr. Econ. Italian almond industry. F. S. **Al-17**. 1926. Year 1926: Livengood, Charles A. Italian almond production. The Minute Book, 1: (22): 31. 1927.

Columns 2 and 3. U. S. Bur. Agr. Econ. Division of Statistical and Historical Research, letter to B. H. Critchfield.

Column 4. U. S. Dept. Agr. Bur. Agr. Econ. The nut industry in Greece, F. S. **N-10**. 1926.

Column 5. Years 1916-1920, U. S. Dept. Agr. Bur. Agr. Econ. Almond production in Tunisia. F. S. **Al-10**. 1925. Years 1921-1925, U. S. Dept. Agr. Bur. Agr. Econ. The Tunisian 1927 almond crop. F. S. **Al-28**. 1927.

Column 6. U. S. Dept. Agr. Bur. Agr. Econ. Production and marketing of Palestine almonds. F. S. **Al-15**. 1926.

TABLE 4  
EXPORT OF ALMONDS\* FROM ITALY BY COUNTRIES OF DESTINATION,  
AVERAGE 1913-1914 AND ANNUAL 1923-1925

Country	Tons exported				Percentage of total exports			
	Average 1913-1914	1923	1924	1925	Average 1913-1914	1923	1924	1925
United States.....	1,601	6,733	4,368	2,677	11.1	25.8	15.4	14.1
Germany.....	4,906	2,539	10,339	6,654	33.9	9.7	36.4	35.2
Austria-Hungary.....	3,588				24.8			
Great Britain.....	883	2,823	1,741	964	6.1	10.8	6.2	5.1
France.....	493	2,703	1,119	834	3.4	10.4	3.9	4.4
Netherlands.....	582	1,882	2,054	1,200	4.0	7.2	7.2	6.3
India and Ceylon.....	974	2,616	1,933	753	6.7	10.0	6.8	4.0
Others.....	1,460	6,768	6,822	5,849	10.0	26.1	24.1	30.9
Total.....	14,487	26,064	28,376	18,931	100.0	100.0	100.0	100.0

\* Includes both shelled and unshelled.

Sources of data: Average 1913-14: Ministero delle finanze. Movimento commerciale del regno d'Italia, 1913, 1914. 1923-1925: U. S. Dept. Agr. Bur. Agr. Econ. Italian almond industry, F. S. **Al-17**. 1926.

Exports of almonds from Italy have also increased substantially, rising from 14,487 tons on the average in 1913 and 1914 to an average of 24,500 tons in 1926.

The main markets of Italian almonds are given in table 4. Before the war Germany was the largest market, followed by Austria-Hungary. In 1913 and 1914 these two countries took 58.7 per cent of the total Italian almond exports. On the other hand, only 11 per cent of the Italian almond exports were sent to the United States. During the war the markets in Germany and Austria-Hungary were largely closed to Italian exporters. As a result greatly increased quantities were shipped to the United States. During the past few years conditions have tended to approach the pre-war basis.

TABLE 5  
EXPORTS OF SHELLED ALMONDS FROM MALAGA (SPAIN) BY COUNTRIES OF  
DESTINATION, 1921-1924

Country	Tons exported				Percentage of total exports			
	1921	1922	1923	1924	1921	1922	1923	1924
United States.....	2,147	1,616	2,050	1,659	61.4	58.5	63.1	46.6
Great Britain.....	1,118	876	1,035	1,372	32.0	31.7	31.8	38.5
Other countries.....	231	272	167	529	6.6	9.8	5.1	14.9
Total.....	3,496	2,764	3,252	3,560	100.0	100.0	100.0	100.0

Data from U. S. Dept. Agr. Bur. Agr. Econ. Large Spanish almond crop confirmed. F. S. A1-7. 1925.

*Spain.*—Spain ranks next to Italy in the world production of almonds. In 1925 and 1926, the production of almonds in Spain was substantially larger than in 1922 (table 3, column 2). It is probable, however, that a considerable part of the increase was due to favorable climatic conditions. According to trade estimates, the production in 1925 was above normal. During the past two years there has been some increase in the almond acreage in Spain. In 1925, it was officially placed at 370,833 acres, and in 1927 at 377,601 acres.

Exports of shelled almonds from Malaga, the main exporting market of Spain, for the years from 1921 to 1924 are given in table 5. During this period the proportion of the total exports shipped to the United States has declined, while the proportion shipped to Great Britain and other countries has increased.

*France.*—The production of almonds in France is small as compared with that in Italy or Spain. During the five years from 1921 to 1925 no definite upward or downward trend in almond production in France is apparent (table 3, column 3).

*Greece.*—The production of almonds in Greece from 1918 to 1925 is given in table 3, column 4. During the past five years the production has been considerably lower than the 1918–1920 average production of 4,500 tons. The recent figures do not indicate any tendency toward increased production. Approximately 20 per cent of the crop, on the average, is exported. The bulk of the exports are sold in Egypt.

*Tunis.*—The available data on almond production in Tunis since 1916 are given in table 3, column 5. There has been no tendency for production to increase during this period. Almond production is largely in the hands of the natives, who consume most of the crop themselves. Only one-fourth of the crop, on the average, is exported. From 85 to 90 per cent of the exports go to France, where they are re-graded.

*Palestine.*—The production of almonds in Palestine has increased steadily since the war (table 3, column 6). It is probable that these estimates of production are considerably under the actual figures, since they were obtained from the tithe assessments only, and these assessments do not cover untaxed private holdings, considerable areas of which are planted to almonds. It is chiefly for this reason that the production estimate in 1924 was much lower than the quantity exported, which amounted to 862 tons. Egypt and Syria are the main markets for Palestine almonds.

*Other countries.*—Almonds are also produced in Persia, French Morocco, Algeria, and Portugal. Data for a series of years on the production of almonds in these four countries, however, are not available.

#### ACKNOWLEDGMENT

The authors of this bulletin wish to express their thanks and indebtedness to the following organizations which have generously contributed from their data and their time: the California Cooperative Crop Reporting Service; the Bureau of Agricultural Economics, United States Department of Agriculture; the Bureau of Foreign and Domestic Commerce, United States Department of Commerce; the Agricultural Legislative Committee; the Division of Agricultural Economics, University of California; and the California Almond Growers Exchange. Farm advisors in the important almond-growing counties have also furnished much valuable information.

## APPENDIX OF TABLES

TABLE 6

BEARING ACREAGE, PRODUCTION, AND AVERAGE YIELD OF ALMONDS PER ACRE  
IN CALIFORNIA, 1914-1927

Year	Bearing acreage	Production	Average yield per acre
	1	2	3
	<i>acres</i>	<i>tons</i>	<i>pounds</i>
1914.....	14,947	2,250	301
1915.....	18,602	3,500	376
1916.....	20,470	3,400	332
1917.....	28,383	4,000	282
1918.....	29,242	5,100	349
1919.....	30,100	7,250	482
1920.....	35,044	5,500	314
1921.....	42,564	6,000	282
1922.....	52,876	8,500	322
1923.....	58,472	11,000	376
1924.....	62,313	8,000	257
1925.....	69,371	7,500	216
1926.....	75,311	16,000	425
1927.....	87,074	12,000	276

Sources of data:

Columns 1 and 2. Kaufman, E. E., California crop report for 1926. California Dept. Agr. Spec. Pub. 74: 25-26, 22. 1927; except for production figures for 1926 and 1927 which are from Kaufman, E. E., Summary of California annual crop report—1927 (*mimeo.*) p. 3. Jan. 4, 1928.

Column 3. Figures in column 2 converted to pounds and divided by corresponding figures in column 1.

TABLE 7

CALIFORNIA ALMOND ACREAGE BY MAIN COUNTIES; BEARING ACREAGE, 1921-1927,  
AND NON-BEARING ACREAGE, 1927

District and county	Bearing acreage							Non-bearing acreage, 1927*
	1921	1922	1923	1924	1925	1926	1927	
Coast district.....	5,487	9,127	12,358	14,318	19,768	23,516	32,316	10,096
Contra Costa.....	2,500	2,500	2,500	2,500	2,535	2,700	2,800	143
Monterey.....	75	2,508	2,458	2,400	4,003	4,003	4,003	100
San Luis Obispo.....	2,000	2,987	6,320	8,489	12,150	15,668	24,242	9,701
Others.....	912	1,132	1,080	929	1,080	1,145	1,271	152
Sacramento Valley.....	22,545	27,276	29,031	30,107	31,632	32,979	34,356	3,062
Butte.....	6,600	7,000	7,400	7,526	7,676	7,837	7,937	53
Colusa.....	1,250	3,200	3,600	4,000	4,500	5,326	5,576	544
Glenn.....	2,042	2,508	2,606	2,703	2,797	2,904	2,860	182
Sacramento.....	2,030	2,326	2,351	2,376	2,400	2,100	2,140	150
Solano.....	1,736	1,776	1,776	1,776	1,794	1,500	1,526	142
Sutter.....	1,776	1,850	1,970	2,090	2,105	2,147	2,227	33
Tehama.....	676	666	662	662	666	915	940	116
Yolo.....	6,000	7,500	8,207	8,501	9,200	9,730	10,630	1,565
Others.....	435	450	459	473	494	520	520	277
San Joaquin Valley.....	11,733	13,011	13,680	14,348	14,258	15,167	16,892	1,235
Merced.....	2,580	2,580	2,950	3,321	3,321	3,920	4,985	156
San Joaquin.....	5,123	5,446	5,519	5,592	5,676	5,875	5,945	193
Stanislaus.....	3,117	3,820	3,995	4,170	3,970	4,067	4,503	668
Tulare.....	468	718	775	832	878	878	954	86
Others.....	445	447	441	433	413	427	506	
Southern California.....	2,739	3,202	3,340	3,477	3,650	3,603	3,479	224
Los Angeles.....	762	1,062	1,062	1,062	1,129	1,069	1,053	73
Riverside.....	1,060	1,155	1,250	1,345	1,400	1,362	1,330	2
Ventura.....	694	707	719	731	746	767	767	63
Others.....	223	278	309	339	395	405	329	86
Other districts.....	120	320	126	126	126	92	62	
State.....	42,564	52,876	58,472	62,313	69,371	75,311	87,074	14,617

\* 1926 plantings of 1,155 acres not included.

Source of data: Revised figures compiled by N. I. Nielsen, California Cooperative Crop Reporting Service.

TABLE 8  
 PRICES PAID TO GROWERS FOR ALMONDS, CALIFORNIA, 1910-1927  
 (Cents per pound—unshelled)

Year	Nonpareil	IXL	Ne Plus Ultra	Drake	Average			All- commodity index
					Price	Relative price	Relative purchasing power	
					1	2	3	
1910	14.00	13.00	12.00	10.00	12.29	88.6	86.0	103
1911	16.50	15.50	14.50	12.00	14.64	105.6	111.2	95
1912	13.25	12.25	11.25	9.50	11.61	83.7	83.0	101
1913	17.25	16.25	15.25	13.25	15.54	112.1	109.9	102
1914	18.00	15.00	14.50	12.50	15.24	109.9	109.9	100
1915	13.00	12.00	11.00	9.25	11.36	81.9	79.5	103
1916	17.25	14.75	13.75	13.00	14.95	107.8	83.6	129
1917	17.50	16.00	15.00	12.50	15.31	110.4	61.3	180
1918	24.00	22.00	21.00	17.00	21.04	151.8	76.7	198
1919	26.00	24.00	21.00	14.00	21.20	152.9	72.8	210
1920	18.50	18.50	16.50	9.00	15.31	110.4	48.0	230
1921	18.00	17.00	16.00	9.00	14.79	106.7	71.1	150
1922	20.00	18.00	16.00	11.00	16.27	117.4	77.2	152
1923	15.00	13.00	13.00	8.00	12.21	88.1	56.5	156
1924	18.25	16.75	16.50	10.75	15.44	111.4	73.3	152
1925	26.25	23.50	21.63	15.88	21.88	157.8	97.4	162
1926*	20.20	16.40	16.60	12.00	16.47	118.8	77.1	154
1927†	21.00	18.00	17.50	13.00	17.49	126.2	85.3	149

\*An additional 5 per cent will in time be paid on the 1926 crop.

† Estimates by the writers, based upon prices received by numerous growers.

Source of data:

Columns 1-4. Anonymous. Prices growers received from the (California Almond Growers) Exchange since 1910. *The Minute Book* 1: (23): 10. 1928.

Column 5. Average price weighted by the relative importance of the four varieties from 1923 to 1926 inclusive (for weights see fig. 7, p. 00).

Column 6. Average price 1910-14 equals 100.

Column 7. Figures in column 6 deflated by the corresponding index number in column 8.

Column 8. U. S. Dept. Agr. Bur. Agr. Econ. *The Agricultural Situation*, 12: 2; 7. 1928.

TABLE 9  
 IMPORTS, PRODUCTION, AND CONSUMPTION OF ALMONDS, UNITED STATES, 1913-1926  
 (Equivalent of unshelled)

Year beginning July 1	Total imports	Foreign exports	Net imports	California production	Total supply available for consumption	Per-capita consumption
	1	2	3	4	5	6
	<i>tons</i>	<i>tons</i>	<i>tons</i>	<i>tons</i>	<i>tons</i>	<i>pounds</i>
1913	22,828	172	22,656	1,100	23,756	0.48
1914	20,764	273	20,491	2,250	22,741	0.46
1915	21,967	530	21,437	3,500	24,937	0.49
1916	30,127	351	29,776	3,400	33,176	0.65
1917	31,483	632	30,851	4,000	34,851	0.67
1918	38,761	309	38,452	5,100	43,552	0.83
1919	43,167	602	42,565	7,250	49,815	0.94
1920	24,122	169	23,953	5,500	29,453	0.55
1921	42,292	58	42,234	6,000	48,234	0.88
1922	36,746	76	36,670	8,500	45,170	0.82
1923	36,445	150	36,295	11,000	47,295	0.84
1924	33,944	190	33,754	8,000	41,754	0.73
1925	29,716	61	29,655	7,500	37,155	0.64
1926	23,869	61	23,808	16,000	39,808	0.68

Sources of data:

Columns 1 and 2. U. S. Dept. of Commerce, Bur. Foreign and Domestic Commerce. U. S. monthly summary of foreign and domestic commerce. June issues.

Column 3. Figures in column 2 subtracted from corresponding figures in column 1.

Column 4. From table 6, column 2.

Column 5. Figures in column 3 added to corresponding figures in column 4.

Column 6. Figures in column 5 converted to pounds and divided by the United States population or the corresponding years.



TABLE 10

## UNITED STATES IMPORTS OF ALMONDS BY COUNTRIES OF ORIGIN, 1913-1926 (IN TONS)

Country of origin	Years beginning July 1					Calendar year										
	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926		
Spain:																
Shelled.....	4,663	2,733	3,609	3,417	4,354	4,484	9,396	4,403	6,518	5,095	5,842	6,354	4,254	5,814		
Unshelled.....	2,476	1,609	1,074	1,710	1,896	2,933	2,694	2,287	1,749	2,258	1,114	1,357	1,669	126		
Total in unshelled*.....	16,465	9,958	11,901	11,961	14,958	16,385	30,882	15,496	21,303	17,543	18,640	20,419	14,431	17,568		
Italy:																
Shelled.....	913	2,863	2,739	4,997	4,871	5,742	3,975	4,308	3,325	6,155	6,575	4,185	2,803	3,378		
Unshelled.....	99	392	41	456	182	77	409	466	142	233	52	18	82	90		
Total in unshelled*.....	2,838	9,041	8,258	15,447	14,795	17,303	12,334	13,390	10,117	18,698	19,777	12,573	8,491	10,224		
France:																
Shelled.....	560	263	332	173	243	176	139	138	187	256	263	492	652	586		
Unshelled.....	248	357	346	270	44	33	581	492	273	277	132	151	250	88		
Total in unshelled*.....	1,928	1,146	1,342	789	773	561	998	906	834	1,045	921	1,627	2,206	1,846		
Other European:																
Shelled.....	219	124	116	495	176	268	247	130	270	198	111	29	184	63		
Unshelled.....	41	47	1	62	6	21	46	83	25	3	7	79	57	27		
Total in unshelled*.....	698	419	349	1,547	534	825	787	473	835	597	340	166	609	216		
All other countries:																
Shelled.....	299	51	38	125	137	102	247	96	135	163	156	44	179	201		
Unshelled.....	2	47	3	8	12	11	12	24	12	84	13	20	18	70		
Total in unshelled*.....	899	200	117	383	423	317	753	312	417	573	481	152	555	673		
Total imports:																
Shelled.....	6,654	6,104	6,834	9,207	9,781	10,772	14,004	9,075	10,435	11,867	12,947	11,104	8,072	10,042		
Unshelled.....	2,866	2,452	1,465	2,506	2,140	3,075	3,742	3,352	2,201	2,855	1,318	1,625	2,076	401		
Total in unshelled*.....	22,828	20,764	21,967	30,127	31,483	35,391	45,754	30,577	33,506	38,456	40,159	34,837	26,292	30,527		

\* Equals unshelled plus shelled converted to unshelled equivalents by multiplying by 3. (One pound of shelled almonds equals 3 pounds of unshelled almonds.)

Source of data: U. S. Dept. Commerce, Bur. Foreign and Domestic Commerce, Foreign Commerce and Navigation of the United States. Annual numbers.

TABLE 11  
IMPORTS OF ALMONDS BY MONTHS, UNITED STATES, SEPT., 1922—AUG., 1927 (IN TONS)

Year	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Total
Average 1923-24 to 1926-27:													
Shelled.....	177	1,132	1,691	1,396	1,402	1,046	994	843	374	236	374	263	9,928
Unshelled.....	76	815	153	96	21	4	20	1	14	60	13	83	1,356
Total in unshelled*.....	607	4,211	5,226	4,284	4,227	3,142	3,002	2,530	1,136	768	1,135	872	31,140
1923-24:													
Shelled.....	152	1,446	2,598	1,722	1,527	1,277	772	771	516	290	732	218	12,021
Unshelled.....	69	906	275	12	17	5	1	1	4	12	42	92	1,436
Total in unshelled*.....	525	5,244	8,069	5,178	4,598	3,836	2,317	2,314	1,552	882	2,238	746	37,499
1924-25:													
Shelled.....	257	1,072	1,417	2,253	1,293	1,250	1,009	836	210	134	80	65	9,876
Unshelled.....	194	1,177	64	16	4	4	61	2	16	229	116	116	1,883
Total in unshelled*.....	965	4,393	4,315	6,775	3,883	3,754	3,088	2,510	646	631	240	311	31,511
1925-26:													
Shelled.....	84	1,017	1,160	934	2,038	898	1,365	934	433	280	305	313	9,761
Unshelled.....	16	1,066	212	350	56	1	17	18	18	229	106	106	1,842
Total in unshelled*.....	288	4,117	3,692	3,152	6,170	2,695	4,112	2,802	1,317	840	915	1,045	31,125
1926-27:													
Shelled.....	216	991	1,587	676	751	759	831	831	338	238	378	457	8,053
Unshelled.....	24	112	62	4	6	6	1	1	18	.....	11	16	261
Total in unshelled*.....	672	3,085	4,823	2,032	2,259	2,283	2,494	2,494	1,032	714	1,145	1,387	24,420

\* Equals unshelled plus shelled converted to unshelled equivalents by multiplying by 3. (One pound of shelled almonds equals 3 pounds of unshelled almonds.)

Source of data: U. S. Dept. of Commerce, Bur. Foreign and Domestic Commerce. U. S. Monthly Summary of Foreign and Domestic Commerce. Monthly issues.

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